ABSTRACT OF TAPE MADE BY DOUGLAS PERHAM AND ERV RASMUSSEN

July, 1963, at the New Almaden Museum, New Almaden

Tape 2, Side 1

Index

1 De Forest Case #2

Item 127. De Forest D10 receiver. Leatherette case. Loop is missing.

Item 129. Miscellaneous honeycomb coils. Can identify them as original de Forest coils by black fibre, diamond shaped piercings. Holmstrup wound first coils.

Item 130. Crystal detector. Vertical, single slide tuning coil made by de Forest himself in Palo Alto.

Item 133. De Forest variable condenser.

Item 134. Honeycomb coil holders. Copied by Murdock, Remler, etc.

Item 136. Grebe synchrophase receiver. Al Grebe headquarters in Long Island. Still very sensitive receiver. Grebe Co. went broke during early 30's...transition from battery to ac.

Item 137. RCA model 20 receiver. Built in mid 20's.

Item 138. Brass speaker case. Bronze housing. Popular since it looked like a microphone.

Item 139. RCA super heterodyne receiver. Called a portable--weighed 90 lbs.

Item 143. Bell Telephone 416 B tubes. Chinese copy of de Forest's tube, except for base. Used for cross-country relays.

86 Poulsen and Magnavox Cases

Item 159. Federal receiving variometer. Large because had to use large wire. Later used "liedsendrot," German wire mesh.

Item 160. Logwood tikker.

Index

108 Item 162. Tikker parts. Original Poulsen tikker was designed by Petersen in Denmark. Logwood improved it.

131 Logwood: Came to California from east about 1900. 1902--demonstrated McCarty's wireless telephone between Cyclers' Rest and Cliff House, San Francisco. After McCarty died, Elwell hired him as de Forest's assistant. De Forest took Logwood with him when he left Federal. Logwood given honorary title of Doctor.

157 Item 163. Mechanical amplifier. Description of parts and operation. Not too satisfactory.

171 De Forest's amplifier. Logwood took three P9 detectors (each with 1 de Forest tube) and hooked these together with telephone transformers. De Forest and Van Etten, also. Discovered the set-up would oscillate. De Forest prior to Armstrong in this. (Berliner and Edison invented the microphone at the same time.)

199 Item 165. Federal Relay Key. Invented by Schultz of Federal in Palo Alto.

Item 166. 3 arc units. Discussion of arc designed for therapeutic treatment. First arc unit brought from Denmark to Palo Alto in 1909. Cost $50.00. 100 watts. Elwell had Perham design and build a larger one--200 watts.

215 Federal Telegraph Co. Story--
Documents

January, 1908. News Clipping. Incorporation of Federal Wireless Telegraphy and Telephony Company in Arizona. Beach Thompson, W. W. Hopkins, George A. Pope, Howard P. Veider (?) of San Francisco.

239 Letter from Beach Thompson to H. P. Veider, April 18, 1913. Thompson in Washington, D. C. talking with ambassadors of South and Central America about establishing communications systems. Also Holland and Japan and China. Carlton, Vice-President of Western Union, sa ys they will act as collecting and disbursing agents in the U. S. Thompson also talked 1½ hours with Secretary of the Navy and his assistant, Mr. Roosevelt.

294 Two 1000 kw arcs built by Federal Telegraph in Palo Alto for the Japanese government. When the war was over, Japanese were unable to pay for them. One arc was given to Stanford

Index

University, where it was cut up with acetylene torch; the other given by Dr. Fuller to the University of California at Berkeley. Perham re-wound the coils to Dr. Lawrence's
301 specifications, and the arc was used in the first cyclotron.

Continuation of letter from Thompson, covering various plans with English, Marconi, our government. Reports on various tests made with Federal equipment.

385 Letter from communications officer at Mare Island, April 18, 1913, saying he could see no value to the U.S. Navy of radio telephone.

Advertisement of V. F. Hutton Co., 1908. Announces the first brokerage house in the world to use a wireless circuit...the Poulsen system.

News clipping, January 28, 1908. Yankee Doodle sung by wireless from Stockton to San Francisco.

399 News clippings. 1908. El Paso received messages from San Francisco, breaking overland record. Poulsen system given severe test: 2 messages from Stockton and Sacramento received simultaneously.

Two articles mentioned: March 30, 1915, paper delivered by Perham to Electric Club of Cedar Rapids, Iowa; article
412 by Dr. Lee de Forest from Electrical Review and Western Electrician, Vol 66, No. 8, February 20, 1915.

Picture of Poulsen as a young man, 1909, in front of Telegraphone Factory in Copenhagen, Denmark. Also shows Mrs. Elwell, Petersen.

Article by C. F. Elwell, read before the S. F. section of Institute of Electrical Engineers on March 25, 1910. Early transmission effected by oscillations generated by means of powerful sparks from condensers charged by means of large inductance coils in the primary circuit of which a suitable telegraph key was inserted. Paper traces improvements. Branley coherer, magnetic electrolytic detectors. Poulsen arc generates undamped waves. Elihu Thompson and Dudell. Undamped waves from 2000 up to 1 million per second. 30 kw arc--improved selectivity, duplex working, greater range, better daylight working, great increase in speed. Had to develop new type detector--the tikker. Description of arc generator parts and operation and also of Poulsen tikker.

Index

Essentials of wireless telephony system. Characteristics of Poulsen system. Good, clear speech over 180 miles in Denmark, 85 miles in California. Wireless telegraph: 180 miles, 300 words per minute; 600 miles, 150 words per minute.

659 Samples of tape made by Poulsen Telegraph during tests made between Stockton and Sacramento. Stockton and Sacramento stations installed by Perham about 1908.

677 Item 178. 23 miscellaneous documents and photos of Federal Telegraph Company.

Item 179. 5 kw loading coil--Federal.

Item 180. 5 Federal transmitting tubes.

690 Charles Litton Story

Stanford graduate--in 3 years. Experimental lab in Redwood City. Avid amateur. Followed work of de Forest. Made his own tubes, later made tubes for Federal Telegraph. Developed glass lathe and the vertical sealer. "Housekeeper" seal between glass and metal. During war built both glass-making machinery and tubes. After war, sold tube-making business, retained tool making business. Went to Grass Valley where now has lab, factory, home. Litton Industries formed for tube manufacturing.

Magnavox Story

745 Peter Jensen, brought from Poulsen Company in Denmark, 1909, by Elwell, to establish stations at Stockton and Sacramento. Experimented in Federal lab at night with E. L. Pridham on a speaker. Left Federal and went to Santa Rosa, where Jensen and Pridham formed Magnavox Co. Developed the moving coil loudspeaker. In mid twenties put out a series of vacuum tubes to work around other patents. Jensen died October 25, 1961, age 75. January, 1962 Radio Electronics story on Jensen. Called world's first disk jockey; played records in early 1900's for men at sea. After working with Pridham, they both came to Oakland, where Jensen had a loudspeaker factory and founded Jensen Industries.

836 Francis P. Farquhar described by Perham. The first accountant hired by Federal Telegraph Co. With them from September 1911 to May, 1912. Later with his his own firm in San Francisco. Compiled a monograph on the Federal Telegraph Company, dated November 15, 1956, now in Perham archives. Consists of a preface by Farquhar and four articles. Three

Index

of these are read on the tape by Perham. The fourth, missing at the moment, deals with Marconi. The three articles are as follows:

894 1) Circular issued by Poulsen Wireless Corporation, 1004 Merchants Exchange Building, February 15, 1911. Describes organization of the company, trustees, board of directors, stock, capitalization, state of the company's stations and patent rights. States that Valdemar Poulsen is now sending 245 words a minute over 900 miles of land. The Poulsen Wireless Corporation able to send messages 750 miles over land or water, day or night. Poulsen in Denmark now hears the human voice clearly over 420 miles. The Poulsen Wireless Corporation in Palo Alto has sent 300 words a minute from San Francisco to Stockton. Conversations held between these points and also Sacramento by wireless telephone. Company plans on 18 stations in near future. Estimates future earnings at $2,400,000 per annum with $1,250,000 net profit.

19 2) History of Poulsen Wireless Corporation. (Author unknown, but published by the Corporation.) 1909-1912. Tells of Elwell securing the patents of Poulsen and Petersen about 1909. Poulsen Wireless Telegraph and Telephone Company's first officers: Elwell, Prof. C. D. Marks of Stanford, R.W. Barrett, J. G. Robesmith, Valdemar Poulsen. Organized on January or February of 1910. $5 million capitalization. Inadequate financial support. Reorganized as Poulsen Wireless Corporation by Beach Thompson and others. Details of the transaction. Wireless Development Corporation the operating company, Poulsen Wireless the holding company. Wireless Development Co. was later changed to Federal Telegraph Co. 1911-1912: expansion of stations to compete with Western Union and Postal Telegraph. De Forest hired to do research. Also Christiansen, a Dane, did research on a rapid sending device. 1912--Beach Thompson negotiations with Publishers Press Co. for stations in all large cities west of the Mississippi. Elwell severed his connection with company in latter half of 1912.

254 3) Circular issued by Poulsen Wireless Corporation and Federal Telegraph and Telephone Company, 1911. Describes stock, patent rights. Hopkins, Meyer, Thompson, trustees. Federal Telegraph Co., strictly an operating company, can turn out the complete equipment for a station in 5 days. Features of the Poulsen or Federal system: 100-300 words per minute; duplex sending and receiving; selectability; privacy; non-interference; reliability; speed; flexibility; capacity. Lists directors, including Spreckles.

424 Article "Telegraphy, Waves without Wires," written by H. P. Veider in the P.G. & E. Co. magazine, 1912. Compares Poulsen system with spark systems. Discusses damped and undamped waves. Mentions conversations between San Francisco and Stockton (100 miles apart) were heard in Los Angeles, almost 500 miles away. Possibilities of the Poulsen arc gaenerator

Index

being used by medical profession in applying heat or antiseptics internally. Poulsen visited doctors in Vienna. (This article is continued on Tape 2, Side 2.)

End of Tape 2, Side 1